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25537 7590 04/15/2009

VERIZON
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1320 North Court House Road
9th Floor
ARLINGTON, VA 22201-2909

EXAMINER

NGUYEN, PHUNG HOANG JOSEPH

ART UNIT

PAPER NUMBER

2614

DATE MAILED: 04/15/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/826,114

04/16/2004

William Christopher Hardy

RIC02005

9860

TITLE OF INVENTION: REAL TIME MONITORING OF PERCEIVED QUALITY OF PACKET VOICE TRANSMISSION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	07/15/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

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If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

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B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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25537 7590 04/15/2009

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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nonprovisional NO \$1510 \$300 \$0 \$1810 07/15/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
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NGUYEN, PHUNG HOANG JOSEPH 2614 370-252000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1417 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1417 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/826,114	HARDY ET AL.	
	Examiner	Art Unit	
	PHUNG-HOANG J. NGUYEN	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to an RCE filed 2/19/2009.
2. ☒ The allowed claim(s) is/are 1, 3-48 and 50 renumbered 1-48.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
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EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Paul Harry on 10/29/2008 and 11/06/2008.
3. Claims 1, 3, 7-8, 14, 16-17, 19, 21, 23-28, 46-48 and 50 have been amended as follow:

Claim 1. (currently amended) ~~[[A]] An automated~~ A method, performed by one or more devices, for monitoring perceived quality of a packet-switched voice service in a network, comprising:

receiving a plurality of packetized voice communication communications via the packet-switched voice service;

obtaining at least one objective measurement from each of the received packetized voice ~~communication~~ communications;

creating a test matrix from the objective measurements;

providing an N dimensional reference matrix that mathematically models likely user perception of acceptable quality of voice service, the reference matrix being derived from a plurality of objective voice measurements known to affect user perception of voice quality, where N is greater than or equal to two;

~~deriving a user perceived quality of voice data based on the at least one objective measurement~~ processing the test matrix to determine the quality of

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voice data over the packet-switched voice service, the quality of voice data over the packet-switched voice service being determined by comparing the reference matrix to the test matrix; and

providing outputting information regarding the user-perceived quality of voice data over the packet-switched voice service,

where the receiving, obtaining, ~~deriving~~ processing, and ~~providing~~ outputting are performed in substantially real-time.

3. (currently amended) The method of claim [[2]] 1, further comprising:
generating at least one alarm in response to [[the]] processing the test matrix, the alarm being generated if the quality of voice over the packet-switched voice service is below a predetermined level.

7. (currently amended) The method of claim [[2]] 1, where providing the N dimensional reference matrix further comprises:

measuring the plurality of objective voice characteristics over a packet-switched voice service to obtain sample measurements;

post-processing the sample measurements to produce stable estimates of perceived voice quality; and

creating the reference matrix from the post-processed performance data.

8. (currently amended) The method of claim [[2]] 1, where processing the test matrix to determine the quality of voice data over the packet-switched voice service further comprises:

creating a reference pattern matrix, the reference pattern matrix embodying a comparison of the test data matrix and the reference matrix.

14. (currently amended) The method of claim [[2]] 1, where processing the test matrix to determine the quality of voice data over the packet-switched voice service further comprises:

computing a mean opinion score (MOS) corresponding to a subjective user evaluation of the quality of voice over the packet-switched voice service.

16. (currently amended) The method of claim [[2]] 1, further comprising:
storing the test data matrix and associated data created during the processing.

17. (currently amended) The method of claim [[2]] 1, further comprising:
defining a data structure for collecting and archiving annotated test data matrices.

19. (currently amended) The method of claim [[2]] 1, where the ~~plurality of test~~ objective measurements include measurements of ~~[[the]]~~ a plurality of objective voice characteristics.

21. (currently amended) The method of claim 1, where obtaining the at least one objective measurement from each of the received packetized voice ~~communication~~ communications, further comprises:

obtaining at least one objective measurement of a reconstituted digital representation of the received packetized voice communication, the reconstituted digital representation being obtained from a receiver codec.

23. (currently amended) The method of claim ~~[[22]]~~ 1, where ~~providing the user perceived quality of voice data further~~ outputting the information regarding the quality of voice data over the packet-switched voice service comprises:

transmitting the ~~user perceived quality of voice data~~ information regarding the quality of voice data over the packet-switched voice service to a quality indicator disposed in a user transceiver set.

24. (currently amended) The method of claim ~~[[22]]~~ 1, where ~~providing the user perceived quality of voice data further~~ outputting the information regarding the quality of voice data over the packet-switched voice service comprises:

transmitting the ~~user perceived quality of voice data~~ information regarding the quality of voice data over the packet-switched voice service to a network management system.

25. (currently amended) The method of claim ~~[[22]]~~ 1, where ~~providing the user perceived quality of voice data further~~ outputting the information regarding the quality of voice data over the packet-switched voice service comprises:
providing a raw distortion measurement.

26. (currently amended) The method of claim ~~[[22]]~~ 1, where ~~providing the user perceived quality of voice data further~~ outputting the information regarding the quality of voice data over the packet-switched voice service comprises:
providing a normalized score corresponding to ~~[[the]]~~ a distortion measurement.

27. (currently amended) The method of claim 22, where ~~providing the user perceived quality of voice data further~~ outputting the information regarding the quality of voice data over the packet-switched voice service comprises:
determining a kurtosis value of a distribution of the differences.

28. (currently amended) A system for monitoring a quality of a packet-switched voice service in a network, comprising:
a memory element configured to store an N dimensional reference matrix that mathematically models likely user perception of acceptable quality of voice service, the reference matrix being derived from a plurality of objective voice measurements known to affect user perception of voice quality, where N is greater than or equal to two;

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a measurement probe configured to obtain a plurality of test measurements for each call placed over the packet-switched voice service; and
a computer coupled to the memory element and the measurement probe, the computer being configured to: [[,]]

derive a test matrix from the plurality of test measurements, [[and]]

process the test matrix, in near real time, to determine the quality of voice over the packet-switched voice service, the quality of voice over the packet-switched voice service being determined by comparing the reference matrix to the test matrix, and

output information regarding the quality of the voice over the packet-switched voice service.

46. (currently amended) The system of claim 45, ~~wherein~~ where the at least one indicator includes a mean opinion score (MOS).

47. (currently amended) The system of claim 45, where the at least one indicator includes a percentage of calls users would find unusable, difficult, or irritating P(UDI), the P(UDI) corresponding to a subjective user evaluation of the quality of voice over the packet-switched voice service.

48. (currently amended) The system of claim 45, where the at least one indicator includes a distortion indicator.

50. (currently amended) ~~[[A]] An automated~~ A method, performed by one or more devices, for monitoring perceived quality of a packet-switched voice service in a network, the method comprising:

providing an N dimensional reference matrix that mathematically models likely user perception of acceptable quality of voice service, the reference matrix being derived from a plurality of objective voice measurements known to affect user perception of voice quality, where N is greater than or equal to two;

obtaining a plurality of test measurements for each call placed over the packet-switched voice service;

creating a test matrix from the plurality of test measurements; ~~[[and]]~~

processing the test matrix, in near real time, to determine the quality of voice data over the packet-switched voice service, the quality of voice data over the packet-switched voice service being determined by comparing the reference matrix to the test matrix; and

outputting information associated with the quality of voice data over the packet-switched voice service.

4. Claims 2 and 49 have been cancelled.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUNG-HOANG J. NGUYEN whose telephone number is (571)270-1949. The examiner can normally be reached on Monday to Thursday, 8:30AM - 5:00PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 571 272 7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CURTIS KUNTZ/
Supervisory Patent Examiner, Art Unit 2614

/Phung-Hoang J Nguyen/
Examiner, Art Unit 2614